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FITZPATRICK CELLA HARPER & SCINTO
30 ROCKEFELLER PLAZA
NEW YORK, NY 10112

EXAMINER	
LAROSE, COLIN M	

ART UNIT	PAPER NUMBER
2623	

DATE MAILED: 05/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/866,667	YANO, KOTARO
	Examiner	Art Unit
	Colin M. LaRose	2623

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 November 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Arguments and Amendments

1. Applicant's amendments and arguments filed 12 November 2004, have been entered and made of record.

Response to Amendments and Arguments

2. For independent claims 1, 6, 12, 17, and 23, Applicant argues that the Lipton reference does not disclose the claimed "depth map … which represents a depthwise distribution of an object." See Applicant's Remarks, pp. 12-14. In general, Applicant argues that Lipton discloses determining the difference between stereoscopic image pairs, which provides horizontal displacement information, but does not provide depth information, as claimed. This argument is not persuasive.

In paragraph 4 of the previous Office action dated 8 June 2004, the Examiner pointed out that the Specification defines "depth" as a "horizontal position shift," rather than the dictionary definition of depth, which is "the quality of being deep" (Merriam-Webster's Collegiate Dictionary, 10^{th} Ed., 2001).

The Specification unequivocally defines "depth" and "depth map" in paragraph 60:

> Herein, the depth map represents a horizontal position shift of the position of the corresponding point in the right image with respect to each pixel in the left image of the pair of stereo images. The depth can be directly determined from the difference in horizontal positions of the corresponding points extracted.

This definition of depth map is consistent with determining the depth of objects in stereoscopic image pairs. It recognizes the fact that, for a stereoscopic image pair, objects in the

foreground will exhibit relatively high motion compared to objects in the far distance, which do not appear to move much, if at all, between the two images. Such a concept is disclosed by Lipton at column 6, line 63 through column 7, line 7, where control points on objects are utilized to determine "an exact amount of movement for [each] point of the image which is exactly under that particular control point." The measured movement at a given point therefore indicates the relative depthwise location of the point.

Since the Specification defines a depth map as a horizontal position shift between corresponding points of stereoscopic images, and this definition is not inconsistent with the generally-accepted meaning of the term "deep," Lipton's teaching of determining the horizontal shift between corresponding points of stereoscopic images is considered to correspond to the claimed "depth map."

MPEP § 2106(II)(C) provides:

> Where an explicit definition is provided by the applicant for a term, that definition will control interpretation of the term as it is used in the claim. Toro Co. v. White Consolidated Industries Inc.,199 F.3d 1295, 1301, 53 USPQ2d 1065, 1069 (Fed. Cir. 1999) (meaning of words used in a claim is not construed in a "lexicographic vacuum, but in the context of the specification and drawings."). ** Any special meaning assigned to a term "must be sufficiently clear in the specification that any departure from common usage would be so understood by a person of experience in the field of the invention." Multiform Desiccants Inc. v. Medzam Ltd., 133 F.3d 1473, 1477, 45 USPQ2d 1429, 1432 (Fed. Cir. 1998).

Applicant has clearly established the meaning of "depth map" in the Specification, so that interpretation of the term is controlling.

3. Regarding the added limitations of claims 1, 12, 18, and 23, Lipton clearly discloses outputting the resulting image to a printer through some type of interface in figure 3 and the description thereof.

Specification

4. In view of Applicant's amendment to the Specification, the previous objection to the Specification has been withdrawn.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1-4, 12-15, 17-20, and 22-26 are rejected under 35 U.S.C. 102(e) as being anticipated by Lipton et al. (U.S. Patent 6,366,281).

The following is in regard to Claim 12. Lipton et al. discloses a method for synthesizing multiple intermediate view images from an input stereo image pair. The method of Lipton et al. is applied particularly to the construction of so-called *parallax, lenticular, or stereoscopic panoramagrams* (Lipton et al. Abstract and Summary of Invention). The method and stereo panoramagram construction involves the following steps:

(12.a.) A depth map extracting step of extracting a depth map, which represents a depthwise distribution of an object, from a stereo image containing object images looking from multiple viewpoints and formed in the same image plane.

To see this, it should first be noted how the Applicant has defined *depth* and hence the depth map and depth distribution of the observed object. According to the Applicant (page 18, lines 6-10 of Applicant's Specification), "the depth map represents a horizontal position shift of the position of the corresponding point in the right image with respect to each pixel in the left image of the pair of stereo images". That is, the Applicant defines depth to be the *horizontal* displacement between the left and right stereo images. This (somewhat perplexing) notion of depth will be adopted henceforth in this document. Observe from Lipton et al. Fig. 3 (reference number 30), that the method and panoramagram of Lipton et al. involves a *tweening* operation to form multiple intermediate view images from the input stereo image pair. See also Lipton et al. column 5, lines 43-56, 60-62 and column 6, lines 58-67 to column 7, lines 1-7. As is well-known in the art of computer graphics and animation, tweening is essentially an interpolation of pixels of the starting image (e.g. left stereo image) and the ending image (e.g. right stereo image). This interpolation necessarily entails the calculation of the horizontal displacement (i.e. the depth) of pixels from the starting and ending images. In this way, extraction of the depth map, as described above, is inherent to the method and stereo panoramagram construction of Lipton et al. Furthermore, note that Lipton et al. requires the images to be plano-stereographic (Lipton et al. column 3, lines 58-64). Such images correspond to different viewpoints and share the same image plane (Lipton et al. column 3, lines 58-64).

(12.b.) A multi-viewpoint image sequence (*tweens* – Lipton et al. Fig. 3, reference number 30 (generating step of generating a multi-viewpoint image sequence of said object looking from the multiple viewpoints based on said stereo image and said depth map. This step is embodied in Lipton et al.'s *morphing* process. See Lipton et al. column 5, lines 43-56, 60-62 and column 6, lines 58-67 to column 7, lines 1-7.

(12.c.) A three-dimensional image synthesizing step of synthesizing a three-dimensional image

(i.e. *interdigitated panoramagram*) based on said multi-viewpoint image sequence. See Lipton et al. Fig. 2C and column 2 lines 16-19, column 4 lines 9-12, and column 5 lines 10-12.

It has thus been shown that the method for synthesizing multiple intermediate view images from an input stereo image pair and the stereoscopic panoramagram construction of Lipton et al. conforms to the image processing method proposed by the Applicant in claim 12. Therefore, the method and panoramagram construction taught by Lipton et al. anticipates the image processing method set forth in claim 12.

Further regarding claim 12, Lipton also discloses outputting the 3-D image to a printer apparatus (see figure 3).

The following is in regard to Claim 13. As shown above, Lipton et al. disclose a method that conforms to that which is set forth in claim 12. In step (12.c) of Lipton et al.'s method of image synthesis and panoramagram construction, the synthesized three-dimensional image (i.e. interdigitated panoramagram) is such that pixels of respective images of said multi-viewpoint image sequence (i.e. the input stereo images and the aforementioned tweens), which have the same coordinates, are arranged as adjacent pixels in accordance with a viewpoint array of the images. This is evident from Fig. 2C and the description (Lipton et al. Fig. 2C and column 2 lines 16-19, column 4 lines 9-12, and column 5 lines 10-12) of the interdigitated panoramagram depicted therein. According to Lipton et al. (Lipton et al. column 4, lines 9-12), "the intermediate images and the source images are then interdigitated to create a single output image with a continuum of views ranging from one source image to the other source image". That is, vertical strips of the intermediate images and source images are horizontally disposed in accordance with the array of viewpoints from left source image to right source image. It has thus been shown that the method for synthesizing multiple intermediate view images from an input stereo image pair and the stereoscopic panoramagram construction of Lipton et al. conforms to the image processing method proposed by the Applicant in claim 13. Therefore, the method and panoramagram construction taught by Lipton et al. anticipates the image processing method set forth in claim 13.

The following is in regard to Claim 14. As shown above, Lipton et al. disclose a method that conforms to that which is set forth in claim 13. As mentioned above and in Lipton et al. (Lipton et al. Fig. 3 reference number 30, column 5 lines 43-56, 60-62 and column 6 lines 58-67 to column 7 lines 1-7), the intermediate images (i.e. the

tweens depicted in Fig. 3, or using the Applicant's nomenclature, the respective images of said multi-viewpoint image sequence) are generated by a process of modifying (i.e. tweening or interpolating) one viewpoint image among the object images, which constitute either of the input stereo image, using said depth map. See the discussion above with regard to claim 1 (specifically, step (12.a)). It has thus been shown that the method for synthesizing multiple intermediate view images from an input stereo image pair and the stereoscopic panoramagram construction of Lipton et al. conforms to the image processing method proposed by the Applicant in claim 14. Therefore, the method and panoramagram construction taught by Lipton et al. anticipates the image processing method set forth in claim 14.

The following is in regard to Claim 15.. As shown above, Lipton et al. disclose a method that conforms to that which is set forth in claim 14. As mentioned previously, the left and right input stereo images are interpolated to generate a multi-view image sequence (i.e. the aforementioned intermediate images or tweens). Interpolation, particularly in "view morphing" processes such as that of Lipton et al., generally yields samples or estimates – in this case, intermediate images – occurring at regularized and equal intervals of some predefined length (interpolation step). In the case of view morphing, interpolating at equal and regular intervals provides a smooth spatial transition between the images being interpolated.

Assuming the input stereo image pair represents parallel (and hence symmetric) views sharing the same image plane[1], such an interpolation (e.g. a linear interpolation) yields intermediate images that are parallel and symmetric to either of the input stereo images. Designation or derivation of correspondences between images representing parallel views is substantially simplified when using parallel views. Consequently, alignment is simplified, or obviated altogether. Furthermore, interpolation of parallel views generally provides correct intermediate parallel views that preserve the shape of the observed object. Given this, it should be clear that the Lipton et al.'s method for synthesizing multiple intermediate view images from a *parallel* input stereo image pair and the associated method of stereoscopic panoramagram construction yield a multi-viewpoint image sequence of the observed object by generating (via interpolation) viewpoints (i.e. tweens) which are arranged spatially at equal intervals and in symmetric (and parallel) relation about a viewpoint of the image (e.g. right or left input stereo

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1 This is a reasonable assumption or constraint, in the image synthesis and panoramagram construction method of Lipton et al., especially when taking into account the discussion in Lipton et al. column 3, lines 58-64.

image) subjected to the modifying process. In this way, the image synthesis and panoramagram construction method taught by Lipton et al. anticipates the image processing method set forth in claim 15.

The following is in regard to Claims 1-4. These claims recite substantially the same limitations as claims 12-15, respectively. (the claimed apparatuses merely being physical manifestation of the methods of claims 12-15). Therefore, with regard to claims 1-4, remarks analogous to those presented above with regard to claims 12-15 are respectively applicable.

The following is in regard to Claim 17. It should be clear from the preceding discussions that Lipton et al.'s image synthesis and panoramagram construction method constitutes a stereophotographic printing method. As shown above, this method includes a depth map extracting step, a multi-view image sequence generating step, and a 3D image synthesizing step conforming to those set forth in claim 17. These correspond, respectively, to the steps (12.a)-(12.c) above. The details regarding these steps and how they relate to claim 17 will not be repeated here.

Lipton et al.'s image synthesis and panoramagram construction method further includes a printing step of printing the three-dimensional image (i.e. the interdigitated panoramagram – Lipton et al. Fig. 2C and column 2 lines 16-19, column 4 lines 9-12, and column 5 lines 10-12) for enabling a stereoscopic image of said object to be observed with an optical member (e.g. lenticular sheet 103 depicted in Lipton et al. Fig. 1A). See Lipton et al. column 10, lines 26-27. It has thus been shown that the method for synthesizing multiple intermediate view images from an input stereo image pair and the stereoscopic panoramagram construction of Lipton et al. conforms to the stereographic printing method proposed by the Applicant in claim 17. Therefore, the image synthesis and panoramagram construction method taught by Lipton et al. anticipates the image processing method set forth in claim 17.

The following is in regard to Claims 18-20. As shown above, Lipton et al. disclose a method that conforms to that which is set forth in claim 17. Claims 18-20 recite substantially the same limitations as claims 13-15, respectively. Therefore, with regard to claims 18-20, remarks analogous to those presented above with regard to claims 13-15 are respectively applicable.

Further regarding claim 18, Lipton also discloses outputting the 3-D image to a printer apparatus (see figure 3).

The following is in regard to Claim 22. As shown above, Lipton et al. disclose a method that conforms to that which is set forth in claim 17. Furthermore, a stereoscopic image (i.e. an image exhibiting a stereoscopic effect – see Lipton et al. column 9, lines 43-44) of the observed object can be observed by placing said optical member (e.g. lenticular sheet 103 depicted in Lipton et al. Fig. 1A) on a print surface (e.g. display surface 101 depicted in Lipton et al. Fig. 1A) of the three-dimensional image (i.e. the interdigitated panoramagram) printed by said printing step. Therefore, the method and panoramagram construction taught by Lipton et al. anticipates the stereographic printing method set forth in claim 22.

The following is in regard to Claims 23-26. Claims 23-26 recite substantially the same limitations as claims 12-15, respectively. (These claims merely propose stored computer programs implementing the respective methods of claims 12-15). Therefore, with regard to claims 23-26, remarks analogous to those presented above with regard to claims 12-15 are respectively applicable.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 5, 16, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lipton et al.

The following is in regard to Claim 16. As shown above, Lipton et al. disclose a method that conforms to that which is set forth in claim 12. Lipton et al., however, do not expressly show or suggest that the stereo image(s) is supplied as digital image data via a network from a image recording device for recording said stereo image as the digital image data.

The examiner takes Official Notice that, at the time of the Applicant's claimed invention, it was widely known and accepted in the field of digital image capture and processing that digital images (a form of digital data) could be recorded by image recording devices (e.g. digital cameras) and supplied to image processing devices (e.g. computers), implementing image processing methods (e.g. those proposed by the Applicant or the image synthesis and panoramagram construction methods of Lipton et al.), via a digital data network. In particular, at the time of the Applicant's claimed invention, stereo images could have been obtained by a variety of image recording devices, including digital stereo cameras, multiple cameras arranged to capture stereo images, or a single digital camera capturing images at several viewpoints.

Clearly, the image synthesis and panoramagram construction method of Lipton et al. admits to such a configuration. Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the applicant's claimed invention, to supply the input stereo images, via a digital data network, from an image recording device – for instance, a digital stereo camera –for recording the input stereo image as digital image data. One would have been motivated to do so because devices such as digital stereo cameras, multiple cameras arranged to capture stereo images, or a single digital camera capturing images at several viewpoints allow for the capture of digital stereo images. Furthermore, the motivation to use a data network to transmit these data would have been to provide communication of the captured input stereo images between an image processing device, presumably implementing the aforementioned image synthesis and panoramagram construction method, and the image recording device(s) digitally capturing the stereo image, where both of these components may be physically separate. Modifying the image synthesis and panoramagram construction method of Lipton et al., in this manner, yields an image processing method that conforms to all limitations of claim 16.

The following is in regard to Claims 5 and 21. Claim 5 recites substantially the same limitations as claims 16 (the claimed apparatus merely being physical manifestation of the method of claim 16). In addition, it was shown above, Lipton et al. disclose a method that conforms to that which is set forth in claim 17. Claim 21 also recites substantially the same limitations as claims 16. Therefore, with regard to claims 5 and 21, remarks analogous to those presented above with regard to claim 16 are applicable.

9. Claims 6-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lipton et al. in view of the Applicant's *Background of the Invention* (pages 1-4 of the Applicant's disclosure – hereinafter, referred to as Prior Art). Note that Applicant's Fig. 10 will also be referred to, since the Applicant makes reference to this figure in Prior Art.

The following is in regard to Claim 6. Note that any system that implements the image synthesis and panoramagram construction method of Lipton et al. (e.g. system depicted in Lipton et al. Fig. 3), which was shown above to be a stereophotographic printing method, can be considered a stereophotographic printing system. As shown above, Lipton et al. disclose an image processing apparatus that does at least the following:

(6.a) Extracting a depth map, which represents a depthwise distribution of an object, from said stereo image.

(6.b) Generating a multi-viewpoint image sequence of said object looking from the multiple viewpoints based on said stereo image and said depth map.

(6.c) Synthesizing a three-dimensional image based on said multi-viewpoint image sequence.

These correspond to steps (12.a)-(12.c) above. See also the discussion relating to claim 1. Furthermore, it should be apparent from the discussion above with respect to claim 17, that any system implementing the image synthesis and panoramagram construction method of Lipton et al. would inherently have a printer executing the aforementioned printing step, wherein the three-dimensional image (i.e. the interdigitated panoramagram – Lipton et al. Fig. 2C and column 2 lines 16-19, column 4 lines 9-12, and column 5 lines 10-12) for enabling a stereoscopic image of said object to be observed with an optical member (e.g. lenticular sheet 103 depicted in Lipton et al. Fig. 1A). See also Lipton et al. column 10, lines 26-27. Lipton et al., however, do not expressly show or suggest images of such a stereophotographic printing system or method be captured by:

1. A camera for photographing an object image.

2. A stereophotographic adapter mounted to said camera for photographing object images looking from multiple viewpoints, as a stereo image, in the same photographed image plane of said camera.

Prior Art, on the other hand, discloses a camera (e.g. camera 2 depicted in Prior Art Fig. 10) for photographing an object (e.g. object 1 depicted in Prior Art Fig. 10) image. Prior Art also shows a

stereophotographic adapter (e.g. adapter 3 depicted in Prior Art Fig. 10) mounted to said camera for photographing object images, looking from multiple viewpoints (i.e. stereographic photographing), as stereo images. See Prior Art page 2, line 25 to page 3, lines 1-2. As indicated by Prior Art (Prior Art page 3, lines 21-22), the stereo images are "formed in the photographed image plane [e.g. image plane 22 depicted in Fig. 10 of Prior Art]".

The teachings of Prior Art and Lipton et al. are combinable because they are analogous art. Specifically, both teachings are directed toward the creation of autostereoscopic lenticular images. Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the applicant's claimed invention, to capture the input stereo images subsequently used by the image processing apparatus of Lipton et al. in a stereophotographic printing system such as the one discussed above. This configuration would be advantageous according to Prior Art (Prior Art page 1, lines 23-25 to page 2 lines 1-3 and page 2 lines 19-25 to page 3 lines 1-2) because it eliminates the need for a complicated multi-lens camera (note camera 2 of Prior Art Fig. 10 only has one lens 21) and can more accurately capture stereo images of moving objects. Configuring a stereophotographic printing system, implementing the image synthesis and panoramagram construction method of Lipton et al., in this manner, would yield a system that conforms to the limitations of claim 6.

The following is in regard to Claim 7. As shown above, the teachings of Prior Art and Lipton et al., when combined in the manner discussed above, satisfy the limitations of claim 6. Furthermore, it was shown above that Lipton et al. disclose an image processing apparatus that synthesizes the three-dimensional image such that pixels of respective images of said multi-viewpoint image sequence, which have the same coordinates, are arranged as adjacent pixels in accordance with a viewpoint array of the images. Therefore, with regard to claims 7, remarks analogous to those presented above with regard to claim 2 are applicable. In this way, configuring a stereophotographic printing system, implementing the image synthesis and panoramagram construction method of Lipton et al., in the manner discussed above, would yield a system that conforms to the limitations of claim 7.

The following is in regard to Claim 8. As shown above, the teachings of Prior Art and Lipton et al., when combined in the manner discussed above, satisfy the limitations of claim 7. Furthermore, it was shown above that Lipton et al. disclose an image processing apparatus where the respective images of said multi-viewpoint image sequence are generated by a process of modifying one viewpoint image among the object images, which constitute said stereo image, using said depth map. Therefore, with regard to claims 7, remarks analogous to those presented

above with regard to claim 3 are applicable. In this way, configuring a stereophotographic printing system, implementing the image synthesis and panoramagram construction method of Lipton et al., in the manner discussed above, would yield a system that conforms to the limitations of claim 8.

The following is in regard to Claim 9. As shown above, the teachings of Prior Art and Lipton et al., when combined in the manner discussed above, satisfy the limitations of claim 8. Furthermore, it was shown above that Lipton et al. disclose an image processing apparatus where the said multi-viewpoint image sequence of said object is generated using viewpoints which are arranged spatially at equal intervals and in symmetrical relation about a viewpoint of the image subjected to the modifying process. Therefore, with regard to claims 9, remarks analogous to those presented above with regard to claim 4 are applicable. In this way, configuring a stereophotographic printing system, implementing the image synthesis and panoramagram construction method of Lipton et al., in the manner discussed above, would yield a system that conforms to the limitations of claim 9.

The following is in regard to Claim 10. As shown above, the teachings of Prior Art and Lipton et al., when combined in the manner discussed above, satisfy the limitations of claim 6. However, neither Lipton et al. nor Prior Art expressly show or suggest that the stereo image(s) is supplied as digital image data via a network from a image recording device for recording said stereo image as the digital image data.

The examiner takes Official Notice that, at the time of the Applicant's claimed invention, it was widely known and accepted in the field of digital image capture and processing that digital images (a form of digital data) could be recorded by image recording devices (e.g. digital cameras) and supplied to image processing devices (e.g. computers), implementing image processing methods (e.g. those proposed by the Applicant or the image synthesis and panoramagram construction methods of Lipton et al.), via a digital data network. In particular, at the time of the Applicant's claimed invention, stereo images could have been obtained by a variety of image recording devices, including digital stereo cameras, multiple cameras arranged to capture stereo images, or a single digital camera capturing images at several viewpoints.

Clearly, the printing system, obtained by combining the teachings of Lipton et al. and Prior Art in the manner discussed above, admits to such a configuration. Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the applicant's claimed invention, to supply the input stereo images, via a digital data

network, from an image recording device – for instance, a digital stereo camera –for recording the input stereo image as digital image data. One would have been motivated to do so because devices such as digital stereo cameras, multiple cameras arranged to capture stereo images, or a single digital camera capturing images at several viewpoints allow for the capture of digital stereo images. Furthermore, the motivation to use a data network to transmit these data would have been to provide communication of the captured input stereo images between an image processing device, presumably implementing the aforementioned image synthesis and panoramagram construction method, and the image recording device(s) digitally capturing the stereo image, where both of these components may be physically separate. Making such a modification to the printing system, obtained by combining the teachings of Lipton et al. and Prior Art in the manner discussed above, yields a printing system that conforms to all limitations of claim 10.

The following is in regard to Claim 11. As shown above, the teachings of Prior Art and Lipton et al., when combined and extended in the manner discussed above, satisfy the limitations of claim 10. Furthermore, Lipton et al.'s optical member is constituted by a lenticular sheet (e.g. lenticular sheet 103 in Lipton et al. Fig. 1A) having a cyclic structure (notice, for example, the cyclic [repeating] structure of lenticular sheet 103 in Lipton et al. Fig. 1A). The configuration shown in Fig. 1A is that of a lenticular stereogram (Lipton et al. *Field of Invention*). As a result, the lenticular sheet , mentioned above, enables a stereoscopic image of said object to be observed when lenticular sheet is laid on a print surface of the three-dimensional image (i.e. the aforementioned interdigitated panoramagram) printed by the aforementioned printer. In this way, configuring a stereophotographic printing system, implementing the image synthesis and panoramagram construction method of Lipton et al., in the manner discussed above, would yield a system that conforms to the limitations of claim 11.

Conclusion

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Colin M. LaRose whose telephone number is (571) 272-7423. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amelia Au, can be reached on (571) 272-7414. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the TC 2600 Customer Service Office whose telephone number is (571) 272-2600.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AMELIA M. AU
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600

CML
Group Art Unit 2623
12 May 2005